

CLAIMS

Sub A1

1. A melt control method which is for use in controlling the state of a melt surrounded by a predetermined atmosphere, characterized in that one component of one specific element contained in the atmosphere is controlled so as to be in a predetermined state.

2. A melt control method as claimed in claim 1, wherein a part of the atmosphere surrounding the melt is an interface between a crucible and the melt, or a melt surface in an opening of the crucible.

3. A melt control method as claimed in claim 1 or 2, wherein the melt is Si melt.

Sub A2

4. A melt control method as claimed in claims 1 to 3, wherein the one specific element is oxygen.

5. A melt control method as claimed in claim 4, wherein an oxygen concentration is controlled on the crucible/melt interface, while an oxygen partial pressure on the melt surface is controlled in the opening of the crucible.

6. A melt control method as claimed in claim 5, wherein the oxygen partial pressure on the melt surface in the opening of the crucible is caused to change in the radial directions of the melt surface.

7. A melt control method as claimed in claim 5, wherein the oxygen partial pressure on the melt surface in the opening of the crucible is caused to change in the radial directions, such that the oxygen partial pressure becomes higher towards the outer circumference from the melt surface's center axis.

Sub A3

8. A melt control method as claimed in claims 5 to 7, wherein the atmosphere covering the melt surface is an argon gas atmosphere

FOI260-227E660

having a controlled oxygen partial pressure.

9. A melt control method as claimed in claims 5 to 8, wherein the oxygen partial pressure is monitored by an oxygen detector and such an oxygen partial pressure is adjusted.

10. A melt control method as claimed in claims 5 to 9, wherein the oxygen partial pressure is in a predetermined state having a pressure of not less than 1.8×10^{-5} MPa.

11. A melt control method as claimed in claims 1 to 10, wherein a buoyancy convection other than the Marangoni convection is inhibited.

12. A crystal growing method characterized in that a melt control method as claimed in claims 1 to 11 is used to grow a crystal by virtue of the Czochralski method.

13. A crystal growing method as claimed in claim 12, wherein an oxygen partial pressure in an atmosphere surrounding the melt is controlled, and an oxygen concentration of a crystal to be grown is also controlled.

Sub 14. A crystal growing method characterized in that a melt control method as claimed in claims 1 to 11 is used to grow a crystal by virtue of the Floating Zone method.

0937272-092401
T04260-2/2/EE60